

Description		DS-1080	DS-1150	DS-1250	
ACQUISITION	Max. Sample rate	200MSPS for one channel only, 100MSPS/CH (real time), 25GSPS/CH (equivalent)			
	Record length	Long Memory Max. 10kBytes/ CH	Long Memory Max. 32kBytes/ CH		
	Peak detect	Captures & displays as narrow as 10ns GLITCH			
VERTICAL	Frequency bandwidth	DC-80MHz (40MHz at 2mV/div)	DC-150MHz (40MHz at 2mV/div)	DC-250MHz (60MHz at 2mV/div)	
	Input Channel	CH1, CH2			
	VOLTS/DIV	2mV/div ~ 5V/div			
	Input impedance	1Mohm $\pm$ 1.5% // Approx. 16pF			
	Max. Input volt	400V (DC+AC Peak) (AC < 1kHz)			
	Accuracy	$\pm$ 3%			
	Input coupling	DC, AC, GND			
MATH	Rising time	Approx. 3.5ns	Approx. 2.3ns	Approx. 1.4ns	
		Arithmetic (ADD, SUBTRACT, INVERSION) FFT : Hamming, Hanning and Rectangular Window Pass-Fail : Editable waveform zone			
HORIZONTAL	TIME/DIV	Equivalent : 2ns/div ~ 0.1 $\mu$ s/div Real time : 0.25 $\mu$ s/div ~ 0.1 s/div Roll mode : 0.2s/div ~ 5s/div			
	Resolution	80ps			
	Accuracy	0.01%			
TRIGGER	Pre trigger	Max. 10div			
	magnification	ZOOM IN / OUT			
	Mode	AUTO, NORMAL, SINGLE			
	Coupling	DC, AC, LF REJECT, HF REJECT			
	Type	Edge, TV			
	SLOPE	Rising, Falling			
	Level	Manual setting or Automatic 50% setting			
	Source	CH1, CH2, EXT, LINE			
	sensitivity	TRIGGER	FREQUENCY	SENSITIVITY	
				5mV ~ 5V/div	2mV/div
INTERNAL (CH1, CH2)			DC ~ 10MHz	0.5 div	0.5 div
			10MHz ~ 80MHz	1.5 div	1.5 div
EXTERNAL	80MHz ~ MAX. BW	2.0 div	(at 10MHz ~ 40/60MHz)		
EXTERNAL	DC ~ MAX. BW	0.2 Vp-p (0.5Vp-p at 150MHz ~ 250MHz)			
DISPLAY	5.7" MONO LCD (320X240) CCFL Backlight				
MENU	Display	Type Dots, Vectors Format X-Y, Y-T GRID Full, Cross, Board Contrast Control possible			
	SAVE/RECALL	10 Setups, 10 Waveforms This function is able to save waveform and setting state of present working environment and recall by the user. Factory setup and recall			
	UTILITY	Self Calibration System condition			
	Cursor	Type : time, frequency, voltage Source : CH1, CH2			
	Acquire	Peak detect : 5 $\mu$ s/div ~ 5s/div(ON/OFF) Average : 2 ~ 128 Persistence : 0.25 $\mu$ s/div ~ 0.1s/div (ON/OFF)			
	Measure	Max. 10 parameter auto measurement (pk-pk, RMS, Mean, Frequency, Rising time, Falling time, Period, Positive width, Negative width, Duty)			
	AUTO SET	Vertical, horizontal & Trigger setting			
HOT-KEY	RUN/STOP	Waveform hold			
	SINGLE	Bandwidth 20MHz			
	HARDCOPY	Hardcopy through printer port or RS-232C port for thermal printer			
INTERFACE	RS-232C	Flow control : XON / XOFF, HARDWARE DATA BIT : 8, 7 STOP BIT : 1 PARITY : NONE, EVEN, ODD BAUD RATE : 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200			
		SPP Standard Parallel Port, PCL 3 support Printer (Hardcopy)			
		USB Ver. 1.1			
POWER	Power supply	90V AC ~ 250V AC			
	Frequency	48Hz ~ 440Hz			
	Power consumption	35W			
WEIGHT	Approx 5.5kg				
SIZE	338(W) X 167(H) X 370(L) mm				
EMC	CE (EN 61326)				
SAFETY	CE (EN61010-1), meet UL3111-1				
AMBIENT CONDITION	Temperature Range for Rated Operation	+10°C to +35°C (+50°F to +95°F)			
	Max. Ambient Operating Temperature	0°C to +40°C (+32°F to +104°F)			
	Max. Storage Temperature	-10°C to 60°C (+14°F to +140°F)			
	Humidity Range for Rated Operation	45% to 85% RH			
	Max. Ambient Operating Humidity	35% to 85% RH			

# 250MHz

# DIGITAL OSCILLOSCOPES

## 250MHz, 25GS/s, 32kBytes, RS-232C, USB, Printer, FFT



### DS-1000 SERIES

#### Bandwidth

- Model DS-1080 : DC - 80MHz
- Model DS-1150 : DC - 150MHz
- Model DS-1250 : DC - 250MHz

#### 25GS/s Sampling Rate Per Channel

#### 5.7 inch LCD Display, Dual Digitizer

#### ADDRESS

HEAD OFFICE & FACTORY : 222-28 Nae -dong, Ojong-gu, Bucheon-si, Gyeonggi-do, 421-160, Korea

Tel : +82-32-681-8380(Rep) Fax: +82-32-681-8404

SEOUL OFFICE : 5F, Paradise Venture Tower, 708-33 Yeoksam-Dong, Gagnam-Gu, Seoul 135-919, Korea

Tel : +82-2-587-9977(Rep) Fax: +82-2-587-7384

OVERSEAS SUBSIDIARY : Morrow Wave, Inc. 6905 Oslo Circle, Suite J Buena Park, CA 90621

Tel : 714-739-3800 Fax: 714-739-3805

The Model DS 1000 Series are featured with wide bandwidth DC to 250MHz, maximum 25GS/s of equivalent time sampling rate and 200MS/s of real-time sampling rate for one channel only, 32kBytes per channel of large recording memory, 10ns peak detection for a glitch capture, FFT (Fast Fourier Transformation) function and easy to-use and useful functions available at a higher priced oscilloscopes.

The adoption of 16 bit high speed microprocessor enables it to acquire maximum 150 waveforms per second and quickly update the pictures on the screen. 32kBytes large recording memory makes sure more precise waveform capturing and captured waveforms can be zoomed in and be analyzed in detail. Its built-in 10ns peak detection circuit enables it to capture high frequency noise at a low speed time/div. And magnify and analyze the noise using the zoom-in function.

A communication module provides functions of USB, RS -232C interface and hardcopy printer. The USB function benefits faster and larger data communication than RS-232C and can be used at no extra budget unlike GPIB, for which requires an expensive installation board to a personal computer.

It provides versatile applications for electronic design, education in colleges, universities and training centers, repair and maintenance, production, quality control and hobbyists, and satisfies increasing needs of higher performance and reliability at a affordable price.

Features/Functions	DS-1080	DS-1150	DS-1250
<b>Bandwidth</b>	80MHz	150MHz	250MHz
<b>Max. sampling rate per channel</b>	25GS/s equivalent -time		
<b>Display</b>	5.7 monochrome LCD		
<b>No. of channel</b>	Dual digitizer		
<b>Record length</b>	10kBytes	32kBytes	
<b>Peak detection</b>	10 ns		
<b>Auto measurement</b>	10 parameters		
<b>FFT function</b>	Standard		
<b>Interface</b>	USB, RS-232C, Printer		

#### Automatic measurement

Max. 5 parameters can be set and measured simultaneously. PK-PK, RMS, Mean, Rising time, Falling time, Period, Positive width, Negative width, Frequency, Duty

#### Save & Recall function

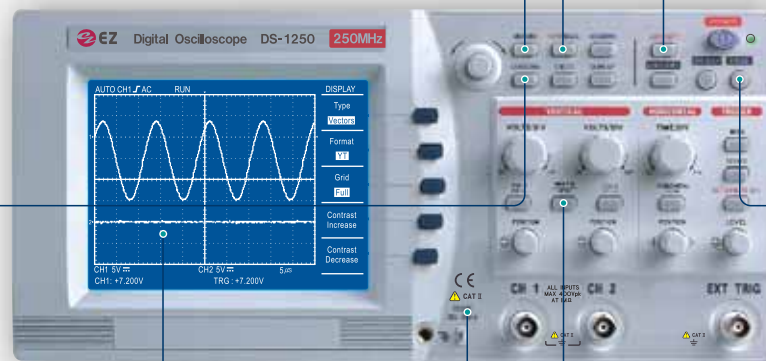
Up to 10 waveforms and setup parameters save and recall are available respectively. A factory setup recall, too.

#### AUTOSET

Automatic setup function for an optimum display of input signals in the vertical and horizontal axis and trigger.

#### Cursor measurement

Two horizontal and vertical cursors are useful to measure parameters of waveform amplitude ( $\Delta V$ ) and times ( $\Delta t$ ,  $\Delta 1/t$ ).



#### Direct single trigger capture

Just pressing the SINGLE button key enables to see a single triggering event on the screen with ease.

#### 5.7 inch TFT LCD Display

Its brightness and contrast are easily adjusted using a menu button or a control knob

#### FFT function

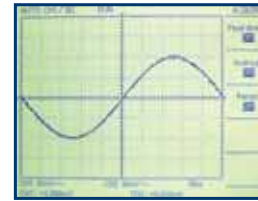
The function displays the captured signals both in the time domain and in the frequency domain and compares and measures the signals with ease simultaneously.

#### Quality and safety certifications

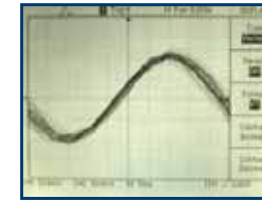
The family series conforms to safety standard CE and UL or cUL and ISO 9001 standard.

### Precise vertical accuracy

A major quality factor in oscilloscope is vertical accuracy. The series offers excellent accuracy and a low noise ratio. In ensuring precise vertical accuracy, a conventional analog signal processing technique exceeds CCD (Charge Coupled Devices) processing technique of FISO (Fast In Slow Out) sampling, which limits horizontal and vertical resolution so shows more noises and higher error rate.



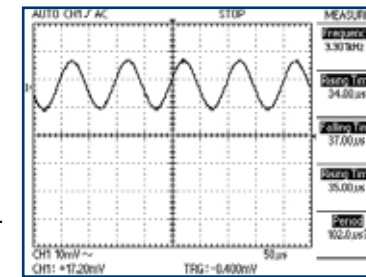
Conventional Signal Processing



CCD Signal Processing

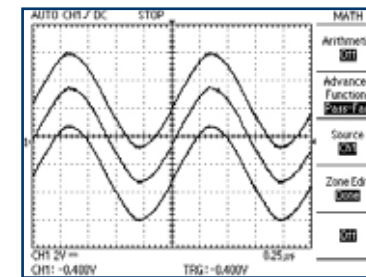
### Automatic measurement of waveform parameters

The DS-1000 Series automatically measure the frequency, voltage and RMS values of a waveform. Maximum 5 parameters are set and simultaneously measured. Total 10 parameters are available: PK-PK, RMS, Mean, Rising time, Falling time, Period, Positive width, Negative width, Duty, Frequency.



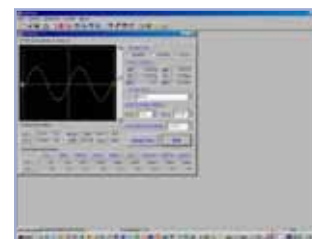
### Pass / fail judgment

Once zones for the waveform of an acquired signal are set, the DS-1000 Series judges the signal measured.

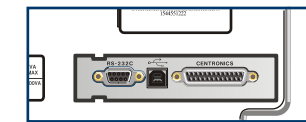


### Software kit and communication module (Optional)

A communication module supports USB, RS-232C interface and hardcopy printer connecting with a PC. The USB function allows faster and larger data communication between PC and oscilloscope at a lower cost than GPIB, for which requires an additional installation of a special device. A software kit includes software program SoftView and RS-232C and USB interface cables together.



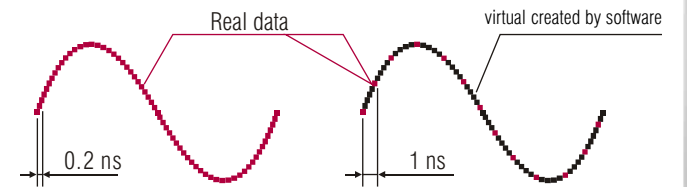
Software SoftView



Communication module

### RIS (Random Interleaved Sampling) for better measurement of repetitive waveforms

RIS sampling allows much better observation of repetitive waveforms. The DS-1000 Series adopt TDC (Time to Digital Converter) technique and display all real data with equality of 10GS/s at 5ns Time/div unlike oscilloscopes using software interpolation like sinc interpolation, which interconnects sampled points with virtual data not real data.

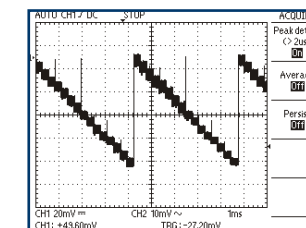


[5ns Time/div, RIS]

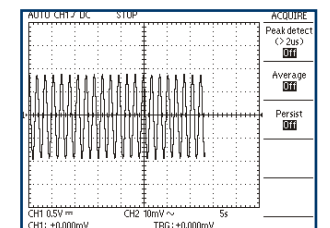
[5ns Time/div with interpolation]

### Peak detection and roll mode

The peak detection is effective for glitch capture and observe high frequency pulse noises or switch characteristics. The roll mode allows slow moving signal observation.



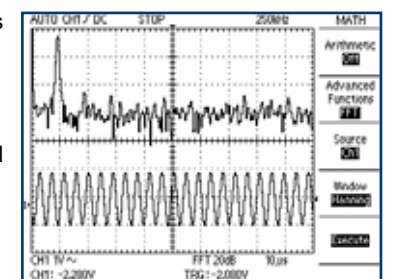
Peak detection mode



Roll mode

### FFT (Fast Fourier Transformation) function

In this mode input signals are displayed both in the time domain and in the frequency domain. The mode, therefore, is useful to compare and measure the signals together.



### Accessories information

#### Accessories included

Each unit is delivered with a power cord and operator's manual.

#### Optional accessories

- Probes: 100MHz probe x1 / x10 / Ref, 150MHz probe x1 / x10 / Ref, 250MHz probe x1 / x10 / Ref
- Software Kit: SoftView, USB cable, RS-232C cable
- Communication Module: Type-A : USB, RS-232C, Printer; Type-B : RS-232C, Printer